

Lockport, Niagara county: a heavy frost occurred in this county on the morning of the 10th. The loss to farmers is estimated at from \$100,000 to \$200,000. The corn and tomato crop was almost entirely ruined. This frost is considered to have been the most destructive that has occurred here for ten years.

Humphrey, Cattaraugus county: a heavy frost occurred on the 10th, seriously injuring all vegetation.

Friendship, Allegheny county: the frost of the 10th killed the corn and buckwheat in this locality.

Rochester: a very heavy frost occurred throughout western New York on the night of the 10-11th. The tobacco crop, fruit, and vegetables were badly damaged.

Oswego: frost of the 11th did much damage in this part of the state.

Frosts also occurred in various parts of this state on the following dates: 2d, 3d, 4th, 6th to 12th, 18th, 20th, 22d, 23d, and from 25th to 29th.

North Carolina.—Highlands, Macon county, 27th.

Ohio.—Reports from various counties throughout Ohio, state that the frosts of the mornings of the 7th, 9th, and 10th, were very heavy, and the corn crop throughout the state was more or less injured.

Frosts occurred at various places in Ohio from the 6th to 12th, on the 18th, and on the 26th and 27th.

Pennsylvania.—Wilkesbarre, Luzerne county: the frost of the 4th killed the late buckwheat and injured the corn.

Philadelphia, 10th: frost occurred in the surrounding localities on this date, killing tender vegetation.

Frosts were reported from numerous points throughout the state on the 4th, 6th, 7th, 9th, 10th, 11th, 19th, 26th, 27th and 29th.

Ontario.—Owen Sound: a remarkably heavy frost occurred throughout this section on the night of the 9-10th. At Priceville ice formed to a thickness of one inch, wheat, oats, and vegetables were badly damaged.

Province of Quebec.—Montreal, 10th: a severe frost last night did great damage to grapes and vegetables.

Rhode Island.—The first frost of the season occurred at Point Judith and Narragansett Pier on the 27th; no damage resulted.

Tennessee.—Milan, Gibson county, 10th, 22d.

Utah.—Salt Lake City, 15th; Nephi, 27th, 28th.

Vermont.—Randolph, Orange county: the frost of the 11th destroyed vegetables and injured the corn crop in this county. Frosts occurred in this state on the following dates: 4th, 6th, 7th, 10th, 11th, 17th, 26th, 27th, 29th.

Virginia.—Marion, Smyth county, 27th.

Washington Territory.—Dayton, 19th, 20th.

West Virginia.—Helvetia, Randolph county: frost of 10th damaged the corn crop in this county.

Wellsburg, Brooke county: the corn crop and vegetation generally were injured by the frost of the 10th.

Wisconsin.—The following telegram was sent from the office of the Chief Signal Office on Friday, September 7th:

"To the Manager, Western Union Telegraph Company, Madison, Wisconsin:

Light frosts are indicated for the tobacco regions of Wisconsin on Saturday.

(Signed)

DUNWOODY,
Assistant."

Reports of frosts which followed the above warning are as follows:

Milwaukee, 9th: the late frosts were general in this state. At Sturgeon bay the crops were entirely ruined. Reports from Appleton and Marshfield state that the corn crop was destroyed.

Fond du Lac, Fond du Lac county: a heavy frost occurred here on the morning of the 9th, doing much damage to crops, especially to corn.

Menomonee, Dunn county: the frost of the morning of the 8th did great damage to corn.

Eau Claire, Eau Claire county: the corn crop in this county was totally destroyed by the frost of the morning of the 8th.

Menasha, Winnebago county, 8th: the frost of this date caused heavy damage to crops in this county.

Milwaukee: a heavy frost occurred in Milwaukee county on the morning of the 10th, which caused a large amount of damage.

Frosts occurred on other dates as follows: 5th to 10th, 17th, 18th, 22d, 26th to 30th.

Wyoming.—Cheyenne: first frost of the season occurred at this place on the 21st.

ICE.

Ice formed during September in the following states and territories:

Colorado.—Fort Garland, 21st.

Dakota.—Wentworth, on the 9th and from the 26th to 30th; Webster, on the 8th and 30th; Alexandria, 30th. At Fort Buford ice formed to a thickness of three-fourths of an inch on the 30th.

Iowa.—Cresco, 8th; Fort Madison, 9th and 26th.

Michigan.—Lansing, 9th and 10th; Swartz creek, 9th, 10th and 26th; Ionia, 9th, 10th and 26th.

Minnesota.—Saint Vincent, 27th; Duluth, 28th.

Montana.—Fort Maginnis, 21st.

New York.—Factoryville, 1st; Palermo, 11th; Friendship, 10th.

Ohio.—Toledo, 9th.

Pennsylvania.—Pittsburg, 10th; Grampian Hills, 10th.

Vermont.—Woodstock, 4th; Strafford, 26th.

Wisconsin.—Franklin, 8th; Embarrass, 8th, 9th.

PRECIPITATION.

[Expressed in inches and hundredths.]

The distribution of rainfall over the United States and Canada for the month of September, 1883, as determined from reports from more than six hundred stations, is exhibited on chart iv.

In the first column of the following table is given the average rainfall for September in the various districts for several years, as determined from observations made at the Signal Service stations; in the second column is given the average for September, 1883, and the third column shows the excess or deficiency of September, 1883, as compared with the average of that month for several years:

Average precipitation for September, 1883.

Districts.	Average for September, Signal-Service observations.		Comparison of Sept., 1883, with the average for several years.
	For several years.	For 1883.	
	Inches.	Inches.	Inches.
New England.....	3.74	2.50	1.24 deficiency.
Middle Atlantic states.....	4.14	4.47	0.33 excess.
South Atlantic states.....	5.94	6.63	0.69 excess.
Florida peninsula.....	6.70	5.07	1.69 deficiency.
Eastern Gulf.....	4.98	1.05	3.93 deficiency.
Western Gulf.....	4.33	3.17	1.16 deficiency.
Rio Grande valley.....	4.54	6.31	1.77 excess.
Tennessee.....	3.48	2.29	1.19 deficiency.
Ohio valley.....	2.49	1.53	0.96 deficiency.
Lower lakes.....	3.03	2.82	0.21 deficiency.
Upper lakes.....	3.98	2.78	1.20 deficiency.
Extreme northwest.....	2.24	1.01	1.23 deficiency.
Upper Mississippi valley.....	3.45	1.67	1.78 deficiency.
Missouri valley.....	2.60	2.60	Normal.
Northern slope.....	1.26	0.89	0.37 deficiency.
Middle slope.....	1.59	3.02	1.43 excess.
Northern plateau.....	0.78	0.06	0.72 deficiency.
Southern plateau.....	1.22	0.57	0.65 deficiency.
North Pacific coast.....	2.13	1.18	0.95 deficiency.
Middle Pacific coast.....	0.21	0.48	0.27 excess.
South Pacific coast.....	0.03	0.04	0.01 excess.
Mount Washington, N. H.....	9.09	6.90	2.19 deficiency.
Pike's Peak, Col.....	2.14	1.76	0.38 deficiency.
Salt Lake City, Utah.....	0.81	0.13	0.68 deficiency.

The monthly rainfall for September, 1883, has been slightly in excess of the average in the middle and south Atlantic states, and on the middle Pacific coast. In the middle and southern slopes and Rio Grande valley large excesses have occurred. At Fort Stockton, Texas, the monthly rainfall was 14.68, or an excess of 13.15 over the September average of the last eight years at that station. The heavy rains of the 4th

and 5th in the Rio Grande valley caused destructive floods in the Rio Grande river and its tributaries. In the Gulf states, Tennessee, the Ohio valley, and over the northern districts from New England to the Pacific coast, the rainfall has been below the average for September. In the eastern Gulf states the deficiency amounts to nearly four inches, and marked deficiencies have occurred in the upper Mississippi valley, New England, the extreme northwest, upper lake region, Tennessee, the west Gulf states and Florida. In the plateau districts and in the north Pacific coast region the deficiencies average about three-fourths of an inch. In the Missouri valley the rainfall has been normal.

The general distribution of rainfall for the month of September, with the districts of maximum departures from the normal in each year from 1873 to 1882, inclusive, are as follows:

Districts.	Maximum departures.	Year.	Remarks
		1873...	{ Normal in New England and in the upper Mississippi and Missouri valleys; deficient in Minnesota, the lower lake region, and Ohio valley; excessive in the Saint Lawrence valley, the middle and south Atlantic and Gulf states.
Middle Atlantic states.....	+ 4.00	1874...	{ Normal on the Pacific coast; excessive in the upper Mississippi and Missouri valleys, the middle and south Atlantic and Gulf states; deficient in Minnesota, Saint Lawrence valley, New England, and the east Gulf states.
Upper Mississippi valley.....	+ 2.55		
Western Gulf.....	+ 2.00		
Minnesota.....	+ 1.60		
Saint Lawrence valley.....	+ 1.05		
Lower lakes.....	+ 1.00		
Western Gulf.....	+ 5.50	1875...	{ Normal in the lower Missouri valley; deficient on the Pacific coast, in Minnesota, the lower lake region, Ohio valley, and in the middle and south Atlantic states; excessive in the upper lake region, the upper Mississippi and Saint Lawrence valleys, New England, and the Gulf states. At Galveston, Texas, the monthly rainfall was 18.41, of which amount more than 12.00 fell during the 16th and 25th.
Eastern Gulf.....	+ 3.95		
Saint Lawrence valley.....	+ 1.50		
South Atlantic states.....	+ 2.55		
Minnesota.....	+ 1.95		
Ohio valley.....	+ 1.00		
Middle Atlantic states.....	+ 4.10	1876...	{ Normal in the Ohio valley; deficient in the lake region and Gulf states; excessive in all other districts.
South Atlantic states.....	+ 3.85		
Upper Missouri valley.....	+ 3.40		
Gulf states.....	+ 3.45		
South Atlantic states.....	+ 4.26	1877...	{ Excessive in the north Pacific coast region, Minnesota, and in the middle Atlantic and Southern states; deficient in California, in the Missouri, upper Mississippi, and Ohio valleys, and from the lake region eastward to New England.
Eastern Gulf.....	+ 2.76		
Western Gulf.....	+ 2.39		
New England.....	+ 2.02		
Lower lakes.....	+ 1.72		
Saint Lawrence valley.....	+ 1.61		
South Atlantic states.....	+ 4.00	1878...	{ Excessive on the Pacific coast, in Minnesota, the Ohio and Saint Lawrence valleys, lake region, and south Atlantic states; deficient in the Missouri and upper Mississippi valleys, New England, and in the middle Atlantic and Southern states.
Portland, Oregon.....	+ 2.63		
Lower lakes.....	+ 2.37		
Upper Missouri valley.....	+ 1.68		
Middle Atlantic states.....	+ 1.33		
New England.....	+ 0.75		
Eastern Gulf.....	+ 1.76	1879...	{ Deficient in California, the upper Mississippi and Missouri valleys, Tennessee, New England, the middle Atlantic and west Gulf states; excessive in all other districts.
Portland, Oregon.....	+ 1.27		
Minnesota.....	+ 0.61		
Western Gulf.....	+ 1.90		
Middle Atlantic states.....	+ 1.24		
Upper Missouri valley.....	+ 1.24		
Western Gulf.....	+ 4.24	1880...	{ Normal in the upper Mississippi, lower Missouri, Saint Lawrence, and Ohio valleys, and in New England; excessive in the Gulf States and Tennessee; deficient in all other districts.
Eastern Gulf.....	+ 1.36		
Tennessee.....	+ 0.66		
Florida.....	+ 3.23		
South Atlantic states.....	+ 3.11		
Middle Atlantic states.....	+ 1.21		
Minnesota.....	+ 4.44	1881...	{ Deficient on the Atlantic coast and in the north Pacific coast region; excessive in all other districts, except normal in southern California.
Upper Mississippi valley.....	+ 3.59		
Lower Missouri valley.....	+ 3.93		
South Atlantic states.....	+ 2.61		
Middle Atlantic states.....	+ 1.41		
North Pacific.....	+ 0.40		
Middle Atlantic states.....	+ 5.50	1882...	{ Normal in the west Gulf states, southern plateau, and in southern California; deficient in the Missouri, upper Mississippi, Rio Grande, and Saint Lawrence valleys, Tennessee, the south Atlantic and east Gulf states; excessive in all other districts.
New England.....	+ 5.47		
Mount Washington, N. H.....	+ 4.61		
Upper Mississippi valley.....	+ 2.57		
Lower Missouri valley.....	+ 2.15		
Pike's Peak, Colo.....	+ 1.93		

DEVIATIONS FROM AVERAGE PRECIPITATION.

The departures exhibited by the reports from the regular Signal Service stations are shown in the table of average precipitation for September, 1883. Voluntary observers report the following notes in connection with this subject:

Arkansas.—Lead Hill, Boone county: monthly rainfall 1.52, is 2.87 below the September average of the last two years.

Georgia.—Brunswick, Glynn county: monthly rainfall 1.20, is the smallest September rainfall of the last twenty years.

Illinois.—Anna, Union county: monthly rainfall 0.51, is 2.26, below the September average of the last eight years.

Riley, McHenry county: monthly rainfall 2.02, is 1.95 below the September average of twenty-two years.

Indiana.—Wabash, Wabash county: monthly rainfall 3.37, is 0.73 above the September average of eight years.

Vevay, Switzerland county: monthly rainfall 4.27, is 0.71 above the September average of fifteen years.

Logansport, Cass county: monthly rainfall 3.14, is 0.30 above the September average of twenty-four years. The largest September rainfall since 1859, was 7.08 in 1866; and the smallest was 0.24 in 1882.

Kansas.—Yates Centre, Woodson county: monthly rainfall 0.44, is 3.16 below the September average of the last three years.

Lawrence, Douglas county: monthly rainfall 1.25, is 1.95 below the September average of sixteen years. The total rainfall for the nine months ending September 30th, is 32.40, or 4.60 above the average of the corresponding months of the last fifteen years.

Wellington, Sumner county: monthly rainfall 4.65, is 0.07 below the September average of the last four years. The total precipitation for the nine months ending September 30th, is 33.97, or 8.90 above the average of the same months of the four preceding years.

Maine.—Gardiner, Kennebec county: monthly rainfall, 3.11, is 0.20 below the September average of a period of forty-seven years.

Maryland.—Fallston, Harford county: monthly rainfall, 5.22, is 0.31 below the September average of thirteen years. The largest September rainfall of that period, 12.95, occurred in 1876; the smallest, 1.21, occurred in 1881.

Missouri.—Saint Louis: the monthly rainfall in and around Saint Louis has been less than 0.01, which is the smallest September rainfall recorded here since 1839. Other small September rainfalls occurred as follows: 0.30 in 1844; 0.17 in 1867, and 0.33 in 1875. The largest September rainfall, 10.53, occurred in 1866. The normal rainfall for September, at Saint Louis, is 3.00.

Nebraska.—The "Nebraska Weather Service" reports the average rainfall for that state by sections, as follows: southeast, 2.12; northeast, 5.77; southwest, 2.00; northwest, 1.03; average for the state, 2.73.

New Hampshire.—Antrim, Hillsborough county: monthly rainfall, 2.85, is 0.76 below the September average of ten years.

Grafton, Grafton county: monthly rainfall, 3.42, is 1.16 below the September average of five years.

New York.—North Volney, Oswego county: monthly rainfall, 2.55, is 5.34 below the September average of twelve years.

Palermo, Oswego county: monthly rainfall, 1.83, is 3.10 below the September average of the last thirty years. The largest September rainfall of that period, 7.30, occurred in 1866; the smallest, 1.00, occurred in 1880.

Ohio.—Wauseon, Fulton county: monthly rainfall, 2.96, is 0.55 below the September average of eleven years. The largest September rainfall of that period, 5.29, occurred in 1879; the smallest, 0.55, occurred in 1871.

Pennsylvania.—Dyberry, Wayne county: monthly rainfall, 2.45, is 0.05 below the September average of the last thirteen years.

Texas.—New Ulm, Austin county: monthly rainfall, 7.71, is 1.78 above the average of twelve years. During that period the largest September rainfall, 15.08, occurred in 1874; the smallest, 0.90, occurred in 1872.

Virginia.—Variety Mills, Nelson county: monthly rainfall, 4.98, is 1.85 above the September average of the last five years.

West Virginia.—Helvetia, Randolph county: monthly rainfall, 3.09, is 1.40 below the September average of seven years.

Table of Excessive, Greatest, and Least Monthly Rainfalls.

Specially heavy.				Largest monthly.	Smallest monthly.	
Station.	Date.	Amt.	Duration.	Amount.	Station.	Amt.
<i>Arkansas.</i>						
Little Rock.....	30	2.77			Mt. Vernon Barracks.....	0.07
Fort Smith.....	30	2.00			State Line.....	0.10
<i>California.</i>						
Fort Gaston.....	29, 30	2.87			Montgomery.....	0.22
<i>Dakota.</i>						
Webster.....	21, 22	3.62			Uniontown.....	0.25
Yankton.....	21	2.07			Pine Apple.....	0.48
<i>Florida.</i>						
Jacksonville.....	17	2.44		7.28	Casa Grande.....	0.00
Limona.....	20	2.18	2 hours		Fort Verde.....	0.00
<i>Georgia.</i>						
Dalton.....	22	2.50			Texas Hill.....	0.00
Millen.....	14	2.37			Fort Thomas.....	1.00
Eastman.....	14	2.20			Wilcox.....	0.04
<i>Indiana.</i>						
Marion.....	22	2.49			Pantano.....	0.06
Vevay.....	23	2.25	1 hr. 30 m.		Benson.....	0.10
Farmland.....	23	2.18			Tucson.....	0.10
Salem.....	19	2.01			San Carlos.....	0.11
Mitchell.....	2	2.00			Yuma.....	0.13
Sunman.....	23	2.00			Maricopa.....	0.30
<i>Kansas.</i>						
Pretty Prairie.....	14, 15	2.00			Prescott.....	0.33
<i>Maryland.</i>						
Fort McHenry.....	17	2.36			Fort Grant.....	0.42
Emmitsburg.....	12	2.33			<i>Arkansas.</i>	
Sandy Springs.....	11, 12	2.16			Monticello.....	0.12
McDonough.....	12	2.06			<i>California.</i>	
<i>New Hampshire.</i>						
Mount Washington.....				6.90	Anaheim.....	0.00
<i>New Jersey.</i>						
Atlantic City.....	11, 12	4.32			Byron.....	0.00
Cape May.....	11, 12	4.22			Colton.....	0.00
Barnegat City.....	11, 12	3.37			Daguer.....	0.00
Freehold.....	17, 18	2.29			Delano.....	0.00
<i>North Carolina.</i>						
Wilmington.....	10, 11	7.82	7 hr. 2 m.	16.53	Goshen.....	0.00
Do.....	14	4.88			Hot Springs.....	0.00
Sloop Point.....	10, 11	6.82		14.63	Indio.....	0.00
Do.....	19	3.96			Keene.....	0.00
Macon.....	10, 11, 12	6.07		12.69	Los Angeles.....	0.00
Do.....	22, 23	3.59			Mojave.....	0.00
Lumberton.....	11	6.20		12.50	Kewhall.....	0.00
Portsmouth.....	11	2.40		11.24	Poway.....	0.00
Do.....	23	2.30			Reno.....	0.00
Goldsboro.....	11	3.47		10.39	San Diego.....	0.00
Hatteras.....	10, 11, 12	0.42		9.89	San Fernando.....	0.00
Do.....	22, 23	2.35			Santa Barbara.....	0.00
New River Inlet.....	10, 11	5.92		9.49	Spadra.....	0.00
Smithville.....	10, 11	5.23		8.49	Summer.....	0.00
Weldon.....	11, 12	6.38		7.75	Tehuacapi.....	0.00
Kittyhawk.....	5	2.17		7.73	Wadsworth.....	0.00
Do.....	10, 11	2.12			White Water.....	0.00
Chapel Hill.....	18, 19	2.19		6.65	Fort Bidwell.....	1.00
Lenoir.....				6.50	Tulare.....	1.00
<i>Ohio.</i>						
Ruggles.....	21	4.50		7.70	Brentwood.....	0.03
<i>South Carolina.</i>						
Florence.....	11	2.43		8.63	Fenner.....	0.06
Stateburg.....	14	3.52	9 h. 45 m.	6.11	Browns.....	0.07
Columbia.....	5	2.21			Caliente.....	0.08
Saint Matthews.....	14	2.18			Lathrop.....	0.08
<i>Texas.</i>						
Stockton.....	13	4.32	8 h. 52 m.	14.68	Solidad.....	0.08
Do.....	17, 18, 19	7.49			Merced.....	0.10
Indianola.....	4	3.16		9.85	Sammit.....	0.10
Do.....	5	2.18			Turlock.....	0.10
Do.....	20	2.10			Needles.....	0.12
Brownsville.....	3, 4, 5	6.21		7.74	Antioch.....	0.13
New Ulm.....	20	3.29		7.71	Humboldt.....	0.13
Houston.....	20	4.00		7.45	Monterey.....	0.19
Luling.....	20	4.00			Salinas City.....	0.19
Fort Concho.....	19, 20	2.52			Menlo Park.....	0.20
Rio Grande City.....	7	2.51			Aleazar Island.....	0.24
El Paso.....	18, 19	2.07			Bavenna.....	0.24
<i>Virginia.</i>						
Norfolk.....	5	2.06		6.63	Angel Island.....	0.25
Variety Mills.....	11, 12	2.75			Hollister.....	0.25
Wytheville.....	24	2.40			Modesto.....	0.25
Fort Monroe.....	11, 12	2.34			Gilroy.....	0.27
Chincoteague.....	11	2.12			Petaluma.....	0.30
<i>West Virginia.</i>						
Wellsburg.....	20	4.50	2 hr. 15 m.	7.27	San Mateo.....	0.30
<i>Alabama.</i>						
					Pajaro.....	0.33
					Livermore.....	0.35
					Pleasanton.....	0.35
					Willows.....	0.41
					San Francisco.....	0.42
					Woodland.....	0.44
					Stockton.....	0.50
					Williams.....	0.50
<i>Dakota.</i>						
					Bismarck.....	0.04
					Fort Sully.....	0.08
					Fort Totten.....	0.14
					Fort Lincoln.....	0.20
					Fort Buford.....	0.22
<i>Florida.</i>						
					Pensacola.....	0.32
<i>Georgia.</i>						
					Alapaha.....	0.10
					Fort Gaines.....	0.14
					Union Point.....	0.36
					Bainbridge.....	0.48
<i>Idaho.</i>						
					Lewiston.....	0.04
					Coeur d'Alene.....	0.16
					Fort Lapwai.....	0.28
<i>Illinois.</i>						
					Swanwick.....	0.06
					Collinsville.....	0.04
					Bunker Hill.....	0.10
					Caro.....	0.31
<i>Indiana.</i>						
					Evansville.....	0.48
<i>Kansas.</i>						
					Fort Scott.....	0.27
					Independence.....	0.27
					Yates Centre.....	0.44

Table of Excessive, Greatest, and Least Monthly Rainfalls.—Continued.

Station.	Specially heavy.			Largest monthly.	Smallest monthly.	
	Date.	Amt.	Duration.		Amount.	Station.
					Kentucky.	
					Louisville.....	0.32
					Louisiana.	
					Morgan City.....	0.10
					New Orleans.....	0.25
					Mississippi.	
					Pass Christian.....	0.01
					Macon.....	0.10
					Hernando.....	0.41
					Missouri.	
					Saint Charles.....	0.00
					Greenfield.....	0.00
					Saint Louis.....	0.01
					Louisiana.....	0.19
					Pierce City.....	0.20
					Shelbina.....	0.20
					Boonville.....	0.25
					Lamar.....	0.25
					Bolivar.....	0.30
					Mexico.....	0.31
					Chamois.....	0.35
					Macon.....	0.35
					Glasgow.....	0.39
					Carthage.....	0.40
					Montana.	
					Fort Keogh.....	0.00
					Fort Shaw.....	0.06
					Nebraska.	
					Marquette.....	0.35
					Nevada.	
					Battle Mountain.....	0.00
					Beowawe.....	0.00
					Carlin.....	0.00
					Pallade.....	0.00
					Tecoma.....	0.00
					Toano.....	0.00
					Elko.....	0.01
					Carson City.....	0.04
					Golconda.....	0.04
					Otego.....	0.04
					Wells.....	0.12
					Fort McDermitt.....	0.24
					Winnemucca.....	0.35
					New Mexico.	
					Lordsburg.....	0.11
					Fort Wingate.....	0.46
					Oregon.	
					Fort Klamath.....	0.18
					Tennessee	
					Erin.....	0.13
					Gadsden.....	0.27
					McKenzie.....	0.34
					Texas.	
					Orange.....	0.14
					Weatherford.....	0.15
					Belton.....	0.24
					Utah.	
					Corinne.....	0.00
					Kelton.....	0.00
					Terrace.....	0.00
					Salt Lake City.....	0.13
					Nephil.....	0.15
					Promontory.....	0.15
					Blue Creek.....	0.50
					Washington.	
					Fort Spokane.....	0.08
					Dayton.....	0.09
					Wyoming.	
					Fort Bridger.....	0.50

rmont.—Woodstock, Windsor county: monthly rainfall, is 0.43 below the September average of the last fifteen . The monthly extremes for that period are: greatest, in 1882; least, 1.07, in 1877.

HAIL.

e only severe hail storm reported during September passed portions of Tennessee, Kentucky, Indiana, and Ohio, on ternoon of the 23d. This storm is described under the ng "local storms."

merous hail storms, none of which are reported as being e, occurred in the various states as follows.

izona.—Prescott, 9th.

orado.—Fort Garland, 9th, 17th; Fort Lewis, 5th; Pike's 2d, 7th, 8th; West Las Animas, 5th, 18th.

nois.—Peoria, 29th.

iana.—Fort Wayne, 29th; Griffin Station, 24th; Laconia. Logansport, 20th, 24th, 29th; Vevay, 20th; Wabash, 24th,

ca.—Keokuk, 7th; Nora Springs, 10th, 23d.

nsas.—Manhattan, 13th; Wellington, 2d.

ryland.—Fallston, 28th.

higan.—Traverse City, 8th.

Vermont.—Woodstock, Windsor county: monthly rainfall, 2.83, is 0.43 below the September average of the last fifteen years. The monthly extremes for that period are: greatest, 6.77, in 1882; least, 1.07, in 1877.

HAIL.

The only severe hail storm reported during September passed over portions of Tennessee, Kentucky, Indiana, and Ohio, on the afternoon of the 23d. This storm is described under the heading "local storms."

Numerous hail storms, none of which are reported as being severe, occurred in the various states as follows.

Arizona.—Prescott, 9th.

Colorado.—Fort Garland, 9th, 17th; Fort Lewis, 5th; Pike's Peak, 2d, 7th, 8th; West Las Animas, 5th, 18th.

Illinois.—Peoria, 29th.

Indiana.—Fort Wayne, 29th; Griffin Station, 24th; Laconia, 23d; Logansport, 20th, 24th, 29th; Vevay, 20th; Wabash, 24th, 29th.

Iowa.—Keokuk, 7th; Nora Springs, 10th, 23d.

Kansas.—Manhattan, 13th; Wellington, 2d.

Maryland.—Fallston, 28th.

Michigan.—Traverse City, 8th.

Nebraska.—Genoa, 13th, 21st; Omaha, 22d; Red Willow, 2d, 13th, 22d.

New Jersey.—Barnegat City, 28th; Freehold, 28th; Moorestown, 30th.

New Mexico.—Fort Union, 11th.

New York.—Ithaca, 29th.

Ohio.—Cleveland, 29th; Toledo, 29th; Wauseon, 23d, 29th; Westerville, 29th.

Tennessee.—Ashwood, 4th.

Texas.—Fort Stockton, 13th, 19th.

Virginia.—Norfolk, 5th.

Wyoming.—Cheyenne, 7th.

SNOW.

Cheyenne, Wyoming.—A very light snowfall occurred here on the morning of the 22d, lasting from 6.30 to 10 a. m.

Mount Washington, New Hampshire.—The sleet storm which prevailed here on the 25th changed to snow at 10.40 p. m.

Marquette, Michigan.—Light snow fell at this place from 7.05 to 7.15 p. m. of the 27th.

Fort Totten, Dakota.—A light sprinkle of snow fell here between 8 and 9 a. m. of the 27th.

Neillsville, Clark county, Wisconsin.—Light snow fell here on the morning of the 28th.

Webster, Day County, Dakota.—The first snow of the season fell at this place on the 28th.

Saint Paul, Minnesota.—A light flurry of snow fell here from 6.20 to 10.20 p. m. on the 28th. Light snow also fell on this date at Minneapolis and Owatonna, Minnesota; and Saint Ignace and Sheboygan, Michigan. At Owatonna the walks and roofs of houses were covered to a depth of one inch.

La Crosse, Wisconsin.—A few flakes of snow fell at this place at 9 p. m. of the 29th.

Farmington, Franklin county, Maine, October 1st.—Three inches of snow fell in the northern part of this county during the night of September 29th.

SLEET.

Mount Washington, New Hampshire, 3d, 25th, 30th.

Pike's Peak, Colorado, 2d, 3d.

Traverse City, Michigan, 8th.

Table of rainy and cloudy days, relative humidity, and dew-point for Sept., 1883.

Districts.	Rainy days.	Cloudy days.	Rel. humidity, %	Dew-point.
			Percentages.	°
New England.....	From 8 to 14	From 5 to 11	From 66.9 to 78.7	From 45.9 to 54.4
Middle Atlantic states.....	" 5 " 14	" 7 " 15	" 65.1 " 83.8	" 48.5 " 63.1
South Atlantic states.....	" 7 " 16	" 5 " 12	" 67.8 " 85.6	" 48.2 " 69.4
Florida peninsula.....	" 7 " 17	" 1 " 9	" 74.5 " 78.4	" 69.6 " 74.0
East Gulf.....	" 3 " 7	" 1 " 5	" 64.1 " 71.4	" 61.0 " 66.6
West Gulf.....	" 4 " 12	" 2 " 9	" 62.5 " 79.4	" 55.0 " 70.8
Rio Grande valley.....	" 6 " 9	" Ten	" 86.0	" 70.2
Ohio valley.....	" 9 " 13	From 3 to 9	" 65.0 " 66.2	" 50.2 " 54.3
Tennessee.....	" 5 " 9	" 0 " 7	" 66.9 " 72.5	" 50.8 " 60.1
Lower lakes.....	" 12 " 17	" 3 " 15	" 67.1 " 74.5	" 47.8 " 51.8
Upper lakes.....	" 8 " 16	" 4 " 11	" 68.6 " 77.6	" 42.7 " 49.7
Extreme northwest.....	" 4 " 5	" 1 " 3	" 60.4 " 79.5	" 38.4 " 43.8
Upper Mississippi valley.....	" 3 " 11	" 2 " 8	" 62.1 " 70.4	" 45.9 " 56.7
Missouri valley.....	" 6 " 11	" 2 " 5	" 61.0 " 73.1	" 43.2 " 51.3
Northern slope.....	" 3 " 9	" 1 " 4	" 44.0 " 68.2	" 29.0 " 48.3
Middle slope.....	" 9 " 10	" 3 " 7	" 47.7 " 61.1	" 36.0 " 50.7
Southern plateau.....	" 1 " 8	" 0 " 3	" 29.4 " 52.6	" 30.1 " 49.9
Northern plateau.....	" 3 " 5	" 0 " 2	" 51.1 " 61.5	" 40.0 " 41.3
North Pacific.....	" 7 " 13	" 2 " 10	" 66.8 " 84.9	" 48.0 " 54.8
Middle Pacific.....	" 1 " 1	" 1 " 5	" 36.7 " 76.7	" 43.7 " 54.6
South Pacific.....	" 0 " 1	none	" 41.9 " 72.5	" 55.5 " 58.9
Mt. Washington, N. H.....	Sixteen	Two	85.7	34.4
Pike's Peak, Col.....	Twelve	One	77.6	23.9
Salt Lake City, Utah.....	Five	One	35.3	39.8
Fort Stockton, Texas.....	Thirteen	Seven	66.9	57.0

• Relative humidity corrected for altitude.

COTTON REGION REPORTS.

In the cotton growing states the rainfall for September, 1883, as compared with that for September, 1882, shows deficiencies in all districts, except for the district of Wilmington, where there has been an excess of 5.87 inches. The largest deficiencies, 3.11, 2.83, and 2.30, occurred, respectively, in the districts of Augusta, Savannah, and Montgomery.

The means of the maxima temperatures in the western districts are higher than those for September, 1882, while in some of the eastern districts they are lower. The means of the

minima temperatures are generally lower, the greatest deficiencies occurring in the districts of Little Rock, Memphis, and Charleston.

Temperature and rainfall averages for the various districts in the cotton region, as shown in the following table, are determined from observations made at the stations shown on chart vi., issued with the REVIEW for April, 1882:

Meteorological Record of the Cotton Districts for the months of September, 1882 and 1883.

Districts.	Average rainfall in inches.		Departures.	Temperatures.				Extremes for Sept., 1883.	
	1882.	1883.		Mean of the maxima.		Mean of the minima.		Max.	Min.
				1882.	1883.	Change.	1882.	1883.	Change.
New Orleans.....	2.64	1.22	- 1.42	86.7	88.4	+ 1.7	67.7	66.2	- 1.5
Savannah.....	4.94	2.11	- 2.83	87.1	86.5	- 0.6	67.2	65.6	- 1.6
Charleston.....	4.73	3.38	- 1.35	84.8	84.5	- 0.3	64.9	61.0	- 3.9
Atlanta.....	3.15	1.72	- 1.43	82.3	83.4	+ 1.1	62.3	61.1	- 1.2
Wilmington.....	3.49	9.36	+ 5.87	81.7	79.7	- 2.0	62.8	61.2	- 1.6
Memphis.....	1.69	1.05	- 0.64	82.7	85.3	+ 2.6	60.3	56.3	- 4.0
Galveston.....	3.50	2.58	- 0.92	86.8	88.7	+ 1.9	64.8	65.1	+ 0.3
Vicksburg.....	1.73	1.11	- 0.62	85.3	88.0	+ 2.7	61.7	61.2	- 0.5
Montgomery.....	3.10	0.80	- 2.30	84.3	86.5	+ 2.2	62.0	60.8	- 1.2
Augusta.....	4.43	1.32	- 3.11	83.9	84.8	+ 0.9	64.4	63.7	- 0.7
Little Rock.....	2.32	0.63	- 1.69	83.3	87.7	+ 4.4	59.0	53.3	- 5.7
Mobile.....	1.39	0.64	- 0.75	86.4	91.2	+ 4.8	62.8	62.8	0.0

WINDS.

The most frequent directions of the wind during September, 1883, at the Signal Service stations, are shown on chart iii., by arrows flying with the wind. In the states bordering on the Atlantic, from New Jersey southward, they were from the north-east; in New England, from the south and southwest; in the lake region, Ohio and upper Mississippi valleys, from the north-east and east; in the Missouri valley, from the north; in the west Gulf states, from the east and southeast; on the Pacific coast, from north and northwest.

TOTAL MOVEMENTS OF THE AIR.

[In miles.]

In the following table are given the stations reporting the largest and smallest total movements of the air in each of the various districts:

Districts.	Stations reporting largest.	Miles.	Stations reporting smallest.	Miles.
New England.....	Block Island, R. I.....	9,727	New London, Conn.....	3,981
Middle Atlantic states.....	Del. Breakwater, Del.....	12,666	Lynchburg, Va.....	2,360
South Atlantic states.....	Kittyhawk, N. C.....	12,438	Augusta, Ga.....	2,757
Florida peninsula.....	Cedar Keys, Fla.....	5,999	Key West.....	4,160
East Gulf.....	Pensacola, Fla.....	4,573	Vicksburg, Miss.....	2,324
West Gulf.....	Galveston, Texas.....	5,838	Little Rock, Ark.....	2,202
Ohio valley.....	Louisville, Ky.....	5,403	Indianapolis, Ind.....	1,840
Tennessee.....	Nashville.....	3,925	Chattanooga.....	2,976
Lower lakes.....	Sandusky, Ohio.....	8,605	Oswego, N. Y.....	4,954
Upper lakes.....	Grand Haven, Mich.....	7,134	Chicago, Ill.....	4,783
Extreme northwest.....	Bismarck, Dak.....	6,125	Saint Vincent, Minn.....	5,344
Upper Mississippi valley.....	Saint Louis, Mo.....	7,201	Dubuque, Ia.....	3,033
Missouri valley.....	Huron, Dak.....	7,658	Omaha, Neb.....	2,385
Northern slope.....	North Platte, Neb.....	7,365	Fort Benton, Mont.....	2,016
Middle slope.....	Fort Elliott, Texas.....	6,007	Denver, Col.....	4,541
Southern plateau.....	Fort Grant, Ariz.....	5,882	El Paso, Tex.....	2,965
Northern plateau.....	Dayton, Wash.....	2,799	Spokane Falls, Wash.....	1,705
North Pacific.....	Fort Canby, Wash.....	7,952	Olympia, Wash.....	1,064
Middle Pacific.....	San Francisco, Cal.....	6,779	Sacramento, Cal.....	3,657
South Pacific.....	San Diego, Cal.....	4,105	Yuma, Arizona.....	2,605

† For 29 days only.

On the summits of Mount Washington, New Hampshire, and Pike's Peak, Colorado, the total movements of the air were 17,665, and 10,277, miles respectively.

HIGH WINDS.

On the summit of Mount Washington, New Hampshire, maximum velocities of fifty miles or more per hour occurred on the following dates: 3d to 9th and 24th to 29th, inclusive. The highest velocities recorded were as follows: 80, nw., 3d; 72, nw., 5th; 108, nw., 9th, maximum for the month; 104, nw., 24th; 72, nw., 26th.

At Cape Mendocino, California, the wind velocities were recorded on only three days during the month, which are as follows: 68, se., 28th; 96, se., 29th; 76, se., 30th.